

selecting a second material having a second electronegativity for said electrically conductive spacer; and
selecting a third material having a third electronegativity for said second ferromagnetic layer;
A/ wherein an absolute value of a difference between said first and second electronegativities is minimized, wherein said first material and said second material comprise substantially the same crystal structure, wherein said first material comprises a first face centered cubic material and said second material comprises a second face centered cubic material.

20. [Amended] A method of making a magnetoresistive sensor formed with an electrically conductive spacer interposed between a first and a second ferromagnetic layer, comprising the steps of:

selecting a first material having a first electronegativity for said first ferromagnetic layer;

selecting a second material having a second electronegativity for said electrically conductive spacer; and

selecting a third material having a third electronegativity for said second ferromagnetic layer;

wherein an absolute value of a difference between said first and second electronegativities is minimized, wherein said step of selecting said first material includes the step of selecting a first Heusler alloy, wherein said first Heusler alloy has a composition of M_1MnM_2 , where M_1 is an element selected from the

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group consisting of Al, Ga, Ge, As, In, Si, Sn and Bi, and M₂ is
an element selected from the group consisting of Co, Ni, Cu, Ir,
Pd, Pt and Au.

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Claim 24, line 1, change "22" to --20--.

38. [Amended] A magnetoresistive sensor comprising:
first and second ferromagnetic layers, said first
ferromagnetic layer comprising a first material having a first
electronegativity; and

an electrically conducting spacer interposed between said
ferromagnetic layers, and comprising a second material having a
second electronegativity;

wherein an absolute value of a difference between said first
and second electronegativities is minimized, wherein said second
ferromagnetic comprises a third material having a third
electronegativity and said first and third electronegativities
are approximately equal, wherein said first material and said
second material comprise substantially the same crystal
structure, wherein said first material comprises a first body
centered cubic material and said second material comprises a
second body centered cubic material.

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Claim 39, line 1, change "36" to --38--.

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Claim 47, line 1, change "46" to --38--.

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Claim 48, line 1, change "27" to --38--.

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50. [Amended] A magnetoresistive sensor as in Claim 38, wherein said first material is a first Heusler alloy, wherein said first Heusler alloy has a composition of M_1MnM_2 , where M_1 is an element selected from the group consisting of Al, Ga, Ge, As, In, Si, Sn and Bi, and M_2 is an element selected from the group consisting of Co, Ni, Cu, Ir, Pd, Pt and Au.

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Amend Claim 56 as follows:

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56. [Amended] A method of optimizing the interfacial properties of a magnetoresistive sensor comprising the steps of:
selecting first and second ferromagnetic layers, each having similar crystallographic orientations, said first ferromagnetic layer having a first electronegativity; and
selecting an electrically conductive spacer disposed between said ferromagnetic layers and having a crystallographic orientation similar to said ferromagnetic crystallographic orientations and having a second electronegativity so that an absolute value of a difference between said first and second electronegativities is minimized, wherein said absolute value is less than approximately 0.14 eV.

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Amend Claim 66 as follows:

66. [Amended] A magnetoresistive sensor disposed on a substrate comprising:
first and second ferromagnetic layers, each having similar crystallographic orientations, said first ferromagnetic

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layer having a first electronegativity; and
an electrically conductive spacer interposed between said
ferromagnetic layers and having a crystallographic orientation
similar to said ferromagnetic crystallographic orientations and
having a second electronegativity so that an absolute value of a
difference between said first and second electronegativities is
minimized, wherein said ferromagnetic layers comprise single
crystal structures and said electrically conductive spacer
comprises a single crystal.

Amend Claim 79 as follows:

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79. [Amended] A magnetoresistive sensor as in Claim 38,
including a substrate in atomic contact with a side of one of
said ferromagnetic layers opposite said spacer; and
an antiferromagnetic layer in atomic contact with a side of
another one of said ferromagnetic layers opposite said spacer;
wherein the sensor is a spin valve sensor;
a buffer layer interposed between said first ferromagnetic
layer and said substrate, wherein said buffer layer is an element
selected from a group consisting of Ta, Cr, Fe, Pt, Pd, Ir and
Au.

Amend Claim 82 as follows:

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82. [Amended] A magnetoresistive sensor as in Claim 79, wherein
said first ferromagnetic layer means is formed over said
substrate;